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(71) Applicant(s)

David John Barron
33 Longden Close, Haynes, BEDFORD, MK45 3PJ,
United Kingdom

Alison Jane Barron
Ickwell Fields, Ickwell Road, Upper Caldecote,
STEVENAGE, Herts, SG1 89B, United Kingdom

(72) Inventor(s)

David John Barron
Alison Jane Barron

(74) Agent and/or Address for Service

Alison Jane Barron
Ickwell Fields, Ickwell Road, Upper Caldecote,
STEVENAGE, Herts, SG1 89B, United Kingdom

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(56) Documents Cited

GB 2247800 A GB 2221113 A EP 0242099 A2
WO 90/08371 A1 WO 89/05460 A1

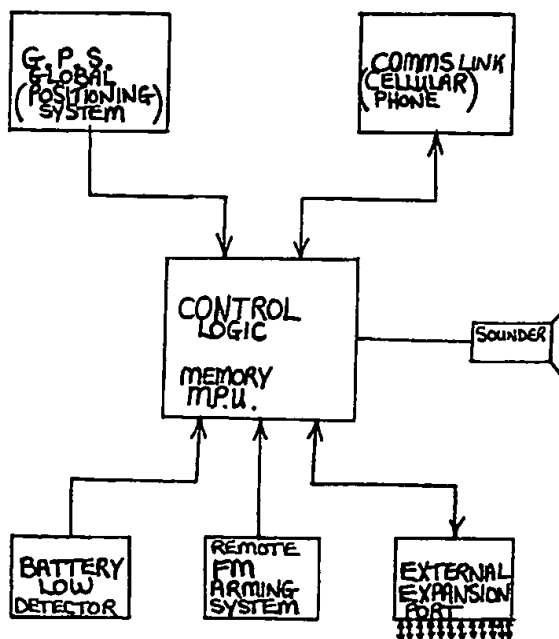
(58) Field of Search

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(54) Tracking device

(57) The device, when fixed to an item of property, for example, a lorry trailer; post office van or car, may be set or re-set by a remote transmitter. When set it records its position using a Global Positioning System. If the property is stolen or lost and the position changes from that when set, it responds by communicating its position back to a pre-set telephone number. It will continue to provide this position data until re-set.

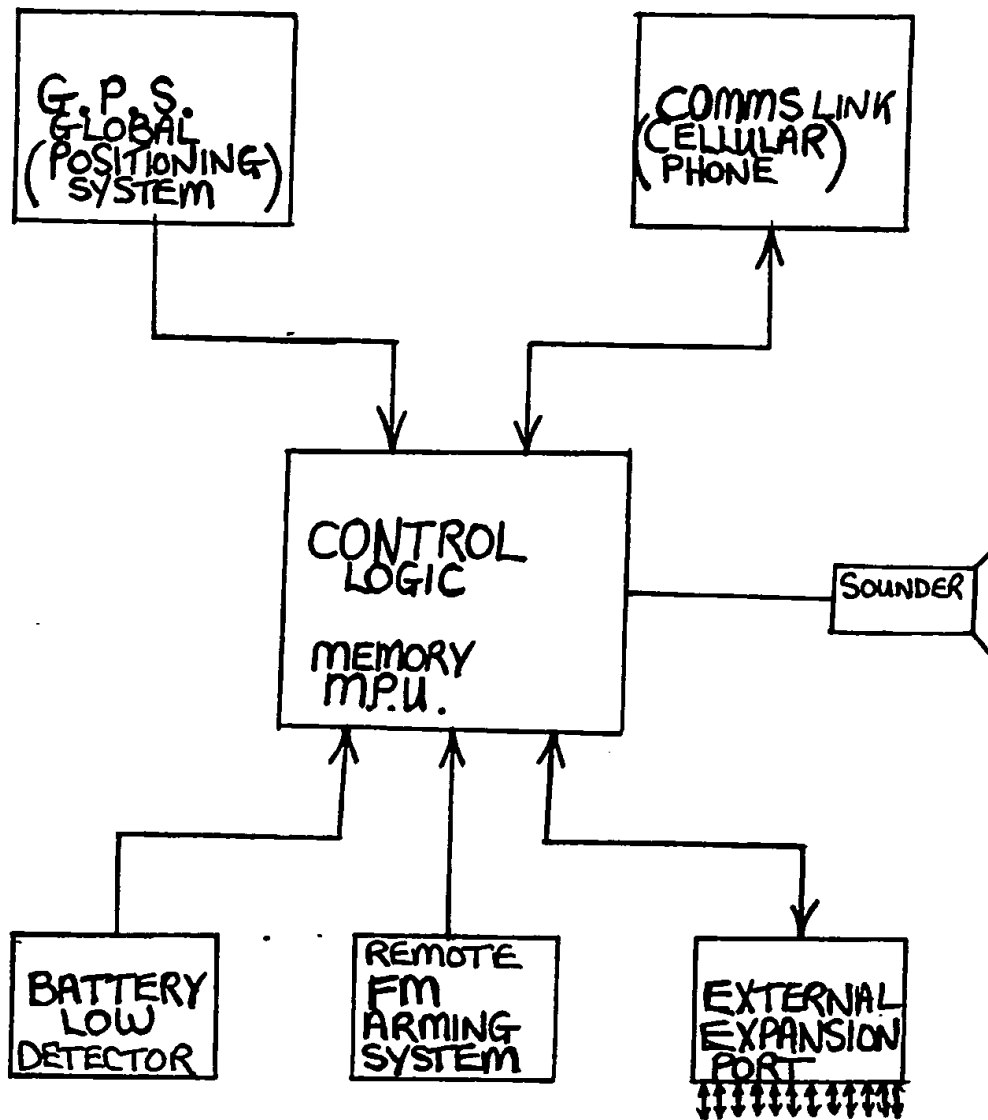
FIG 1



SYSTEM FUNCTION BLOCKS

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FIG 1



SYSTEM FUNCTION BLOCKS

TRACKING DEVICE

1.

This invention relates to a tracking device.

Theft on the increase and the obvious distress and financial loss caused when a car, lorry, boat, caravan, trailer, or other item is stolen or lost led to the realization that the requirement of the owner or keeper is to find and retrieve the lost or stolen item.

At present, transponders may be used on an item to produce a signal which may be tracked with a series of aerials. This is not an economical use of battery power and requires the use of personnel to handle the aerials. Buildings, etc., disturb the signals and overall the system is not wholly reliable at ground level. A more usual use for the above described method is for aircraft position finding.

A system utilising satellites is now available. It is called Global Positioning System or G.P.S. It can resolve position on the Globe to within metres. Existing devices using G.P.S. produce and display on a screen data relating to position. This includes track direction, estimated time of arrival and other data.

Also available is cellular telephone technology which makes communication relatively simple and economical.

According to the present invention, there is provided a tracking device, comprising an electronic circuit.

This circuit comprises three main functional parts:

- 1) An electronic circuit capable of resolving Global position from satellites commonly known as Global Positioning System or G.P.S.
- 2) An electronic circuit for communicating over the cellular telephone system, but not limited to this system of communication, And including any wireless radio link.
- 3) An electronic circuit for controlling the forementioned circuits and for controlling the operation of the whole device.

Further to the above mentioned circuits, the device may be provided with extra circuits to enhance its operation and provide the device with a user interface.

Figure 1 shows the circuit function blocks with an example of data flow between the various blocks shown by arrows.

The device can be required to be used in conjunction with the Owner's/Keeper's property, anything from a car, boat, caravan, trailer, lorry or the like to a normally stationary item such as a safe, till, cash point machine, briefcase or the like.

Continued/...

It may also be used to trace missing persons such as climbers, walkers, fishermen or the like, if worn on the person.

An example of how a user might use the device and how the device responds follows: The device would be fixed to an item or carried and optionally connected to an external power supply. It would then be ready for use. An example of operation, if the device had been installed on a lorry trailer, would be on leaving the lorry, the driver would send an arming signal from the remote transmitter. The device, after receiving the arming signal would read its position and remember this. After a pre-set time, the device would look again at its position and compare it with its last position. If the position is the same, or within pre-set limits, then nothing will occur. If the position is found to be different or outside the pre-set limits, as would be if the lorry had been stolen or moved without first being disarmed, then the device would respond by telephoning/communicating with a pre-set number/base and divulging its position via either speech synthesis or data link. At this time, the device is said to be "tripped" and may relay its position periodically until either a reset command is received from the remote transmitter or a reset command is received via the telephone/communication link. This would enable the lorry to be located and/or followed to enable retrieval before the contents of the lorry trailer had been removed.

The G.P.S. can be commanded to relay other information relating to position such as: track, direction and speed.

The operation and application of the device would be broadly similar irrespective of what item it was attached to. Pre-set values may be stored to allow the device to "stray" within limits without tripping.

A pre-set "route" may be stored so any deviation from that route would cause the device to "trip".

The device would also monitor its power condition and should this become low, would telephone/communicate with its base and convey this information.

To conserve power if the device is only running on its internal batteries/power source then the telephone/communication link may be optionally disabled until device is "tripped", whereas, if the device is connected to an external power source then the telephone/communication link would, when the device is reset, be placed on standby allowing a user to interrogate the position of the device even when not armed.

The operation of the device could have other uses dependent upon how it is programmed to operate and its application is not limited.

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ClaimsTracking Device

- 1) A tracking device comprising an electronic circuit capable of resolving global position from satellites known as G.P.S.

An electronic circuit for communicating over the cellular telephone system, but not limited to this system of communication and including any wireless radio link.

An electronic circuit for controlling the forementioned circuits and for controlling the operation of the whole device.

- 2) A tracking device as claimed in Claim 1) wherein a further electronic circuit determines the receipt of an incoming transmission from a remote control transmitter.
- 3) A tracking device as claimed in Claim 1) or Claim 2) wherein a further electronic circuit determines low battery level.
- 4) A tracking device as claimed in Claim 1) or Claim 3) wherein a further electronic circuit provides an interface to further internal or external circuits.

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Patents Act 1977
Examiner's report to the Comptroller under
Section 17 (The Search Report)

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Relevant Technical fields

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 (DPBC, DAA, DAB)
- (ii) Int CI (Edition 5) G08B 13/00, 13/14; B605 25/10

Search Examiner

D L SUMMERHAYES

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASE: WPI

Date of Search

20 NOVEMBER 1992

Documents considered relevant following a search in respect of claims 1-4

| Category (see over) | Identity of document and relevant passages | Relevant to claim(s) |
|------------------------|--|-------------------------|
| X | GB 2247800 A (GEC-MARCONI) | 1 |
| X | GB 2221113 A (BROWN) | 1 |
| X | EP 0242099 A2 (ADVANCED STRATEGICS) | 1-4 |
| X | WO 90/08371 A1 (COLES) | 1 |
| X | WO 89/05460 A1 (SECRETARY OF STATE FOR DEFENCE) | 1 |

| Category | Identity of document and relevant passages | Relevant to claim(s) |
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Categories of documents

X: Document indicating lack of novelty or of inventive step.

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E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

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